



TU 162004 UK 562
BEST AVAILABLE COPY

INVESTOR IN PEOPLE

The Patent Office

Concept House

Cardiff Road

Newport

South Wales **ECD 24 JUN 2004**

NP10 8QQ

WIPO

PCT

PRIORITY DOCUMENT

SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH RULE 17.1(a) OR (b)

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

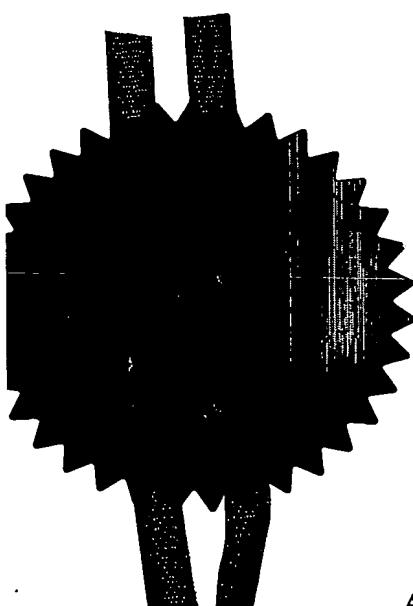
In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated 16 June 2004



Patents Form 1/77

Patents Act 1977
(Rule 16)

THE PATENT OFFICE
OF
- 6 JUN 2003
RECEIVED BY FAX

BEST AVAILABLE COPY

**The
Patent
Office**

CATINW3 ER13076-1 D03012
PA1/7700 0.04-0313046.5**Request for grant of a patent**

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form.)

The Patent Office

 Cardiff Road
Newport
South Wales
NP9 1RH

1. Your reference

P3131

2. Patent application number
(The Patent Office will fill in this part)

0313046.5

F 6 JUN 2003

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*
 Huntsligh Technology PLC
310-312 Dallow Road
Luton
Bedfordshire.
LU1 1TD
Patents ADP number *(if you know it)*

506907001

If the applicant is a corporate body, give the country/state of its incorporation

United Kingdom

4. Title of the invention

Inflatable Pad

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom to which all correspondence should be sent
(including the postcode)

 Shalini Thaker
Group IP Department
Huntsligh Technology PLC
310-312 Dallow Road
Luton
Bedfordshire
LU1 1TD
Patents ADP number *(if you know it)*

7111263004

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country

Priority application number
*(if you know it)*Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)
 8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*
 a) *any applicant named in part 3 is not an inventor; or*
 b) *there is an inventor who is not named as an applicant; or*
 c) *any named applicant is a corporate body.*
See note (d))

Yes

Patents Form 1/77

007103106108103103150

Patents Form 1/77

BEST AVAILABLE COPY

9. Enter the number of sheets for any of the following items you are filing with this form.
Do not count copies of the same document

Continuation sheets of this form -

Description 4

Claim(s) 1

Abstract 1

Drawing(s) 3

10. If you are also filing any of the following, state how many against each item.

Priority documents -

Translations of priority documents -

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination 1
and search (Patents Form 9/77)Request for substantive examination 1
(Patents Form 10/77)Any other documents -
(please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date 6 June 2003

12. Name and daytime telephone number of person to contact in the United Kingdom

Tracey Long (01582) 745812

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0845 5000505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.

BEST AVAILABLE COPY~~DUP. DUPLICATE~~INFLATABLE PAD

This invention relates to alternating pressure pads, and in particular to alternating pressure pads of the 5 kind used in the prevention and management of decubitus ulcers in bedridden patients.

The formation of decubitus ulcers, commonly known as bed sores, results from, amongst other things, the pressure applied to certain portions of the skin of a 10 bedridden patient. It is known to meet the requirement for the prevention and management of decubitus ulcers with an alternating pressure pad comprising two series of 15 inflatable cells which are interleaved, one series within the other, the cells alternately inflated to support a patient at different locations. Typically, inflation and deflation cycles may last from under two minutes for a gentle massaging effect to over twenty minutes.

Typically, large cells have been used in the form of an elongate cylinder extending linearly straight across a 20 pad. However, these pads have experienced problems in that the alternating inflation and deflation of adjacent cells tends to induce movement of the user down the pad, requiring the user to be manually re-positioned by a nurse or carer. This movement is uncomfortable to the 25 user and areas of the body that require pressure relief from a deflated cell are moved onto an inflated cell resulting in reduced pressure relief for the user.

A further disadvantage encountered with such cells is that a user's bony protuberances, for example, their 30 heels can fall inbetween the inflated cells and rest on the support beneath, therefore experiencing the high pressures likely to cause pressure sores. Furthermore, as the support backrest or pillows are raised to support the user in a seated position, the cells have tended to

BEST AVAILABLE COPY

separate out under the user's sacrum resulting in the user bottoming and resting on the support beneath the pad. Again, the pressure relief for the user is compromised.

5 The present invention seeks to make improvements.

Accordingly, the present invention provides an alternating pad comprising at least two sets of alternately inflatable cells, the cells extending linearly transversely along the pad and held in place on 10 a pad base by retaining means, characterised in that the retaining means urge the cells to describe a curve across the pad. By urging the cells to assume a curve, the pad overcomes the problem in prior art alternating linear celled pads, of the cells moving apart in relation to 15 each other, creating gaps that parts of a user's body could fall through. The cell axis as a curve creates a more stable structure, resulting in reduced movement of the user along the pad thereby increasing user comfort and the pressure relief obtained.

20 Preferably, the retaining means are releasable. In a preferred embodiment the retaining means secure the opposite ends of each cell at a predetermined distance from the centre linear axis of the cell. More preferably, the retaining means secure the central region of the 25 cells along the centre linear axis of the cell. In the preferred embodiment, the retaining means comprise loop straps fixed to the pad base retaining the central region of each cell and hook type fasteners retaining each opposite end of the cell.

30 By moving the fixing points of the opposite ends of each cell away from the same centre line as the centre region of the cell held in the loop straps, the loop straps are tensioned. In use, when a user exerts force in lying or sitting upon the cell surface, the cells are not

BEST AVAILABLE COPY

able to move or rotate as with existing prior art pads as the loop straps in their tensioned state have no room to manouver. The resulting cell axis is a curve creating a more stable structure and has been seen to dramatically 5 reduce the movement of a user along the pad with improved user comfort and enhanced pressure relief.

The invention will now be described by way of example only, with reference to the accompanying figures in which:-

10 Figure 1 is a schematic view of a pad according to the invention;

Figure 2 is a schematic view showing the retaining means of the cells of the pad;

15 Figure 3 is a schematic view of the retaining means of a preferred embodiment of the invention; and

Figure 4 is a plan view of the retaining means in Figure 3.

Figure 1 shows a plan view of a pad 10 comprising a bank 20 of interleaving linear cells 2 extending transversely of the pad 10. As shown in Figures 1 and 2, loop straps 1 hold the central section of the cells 2 linearly in parallel with the cell axis 11 whereas the opposite ends 3 of the cells 2 are secured a pre-determined distance 4 off-set from the cell axis 11. The 25 distance 4 can vary along the length of the pad.

By fixing of the ends 3 of the cells 2 at a distance 4 away from the cell axis, each end 3 of the cell 2 is pulled away from the centre axis of the cell, the loop straps 1 holding the central section of the cell become 30 tensioned, preventing the central cell section from moving or rotating.

The fact that there is no rotation of the cells is a major advantage because one of the main reasons for the prior art alternating pads inducing downward movement of

BEST AVAILABLE COPY

the user as the cells alternately inflate and deflate, is that with the cell ends anchored on a common linear axis with the loop straps, the loop straps are allowed to pivot about their anchor points and the cells to rotate under a user supported thereupon. These actions act in a similar manner to a conveyor belt. The rising cell supports the user, moves or rotates down the bed, deflates, rises again in its original position and the process continues over and over again.

Moreover, in these prior art alternating pads when a user is positioned in the seated position, a gravitational load is applied to the cells as gravity urges the user down the pad. The resultant movement is uncomfortable to the user and areas of the body that require pressure relief are moved from the deflated cell providing the pressure relief onto an inflated cell with increased contact pressure and resultant compromise in pressure relief.

In a preferred embodiment, each cell end 3 is fitted with a anchor shaped hook 20 which is inserted into a corresponding slot on the pad base 12. (See Figures 3 and 4). The anchor hook 20 is rotated by 90 degrees to align the hook ends 21 with mating apertures 13 within the base 12. The hook ends 21 enter the apertures 13 and secure the cell end 3 to the pad base 12. The cells can be detached from the base 12 by reversing the above procedure.

Other retaining means can be used to secure the cells in place in the manner described above to achieve the same effect of the cell assuming a curved shape across the pad.

BEST AVAILABLE COPY**CLAIMS:**

1. An alternating pad comprising at least two sets of alternately inflatable cells, the cells extending linearly transversely along the pad and held in place on a pad base by retaining means, characterised in that the retaining means urge the cells to describe a curve across the pad.
- 10 2. An alternating pad as claimed in claim 1 characterised in that the retaining means are releasable.
- 15 3. An alternating pad as claimed in claims 1 or 2 characterised in that the retaining means secure the opposite ends of each cell at a predetermined distance from the centre linear axis of the cell.
- 20 4. An alternating pad as claimed in claim 3 characterised in that the retaining means also secures the central region of the cells along the centre linear axis of the cell.
- 25 5. An alternating pad as claimed in claim 4 characterised in that the retaining means comprise loop straps fixed to the pad base retaining the central region of each cell and hook type fasteners releasably retaining each end of the cell.
- 30 6. An alternating pad substantially as herein claimed and described with reference to the accompanying drawings.

BEST AVAILABLE COPY**ABSTRACT:**

A pad 10 of interleaving linear cells 2 has loop straps 1 to hold the central section of the cells 2 linearly in parallel with the cell axis 11, whilst the opposite ends 3 of each cell 2 are secured a pre-determined distance 4 off-set from the cell axis 11. The distance 4 can vary along the length of the pad.

By fixing of the ends 3 of the cells 2 at a distance 10 4 away from the cell axis, each end 3 of the cell 2 is pulled away from the centre axis of the cell, the loop straps 1 holding the central section of the cell become tensioned, preventing the central cell section from moving or rotating. The resulting cell axis is a curve 15 creating a more stable structure and has been seen to dramatically reduce the movement of a user along the pad with improved user comfort and enhanced pressure relief.

Figure 2 to accompany abstract.

BEST AVAILABLE COPY

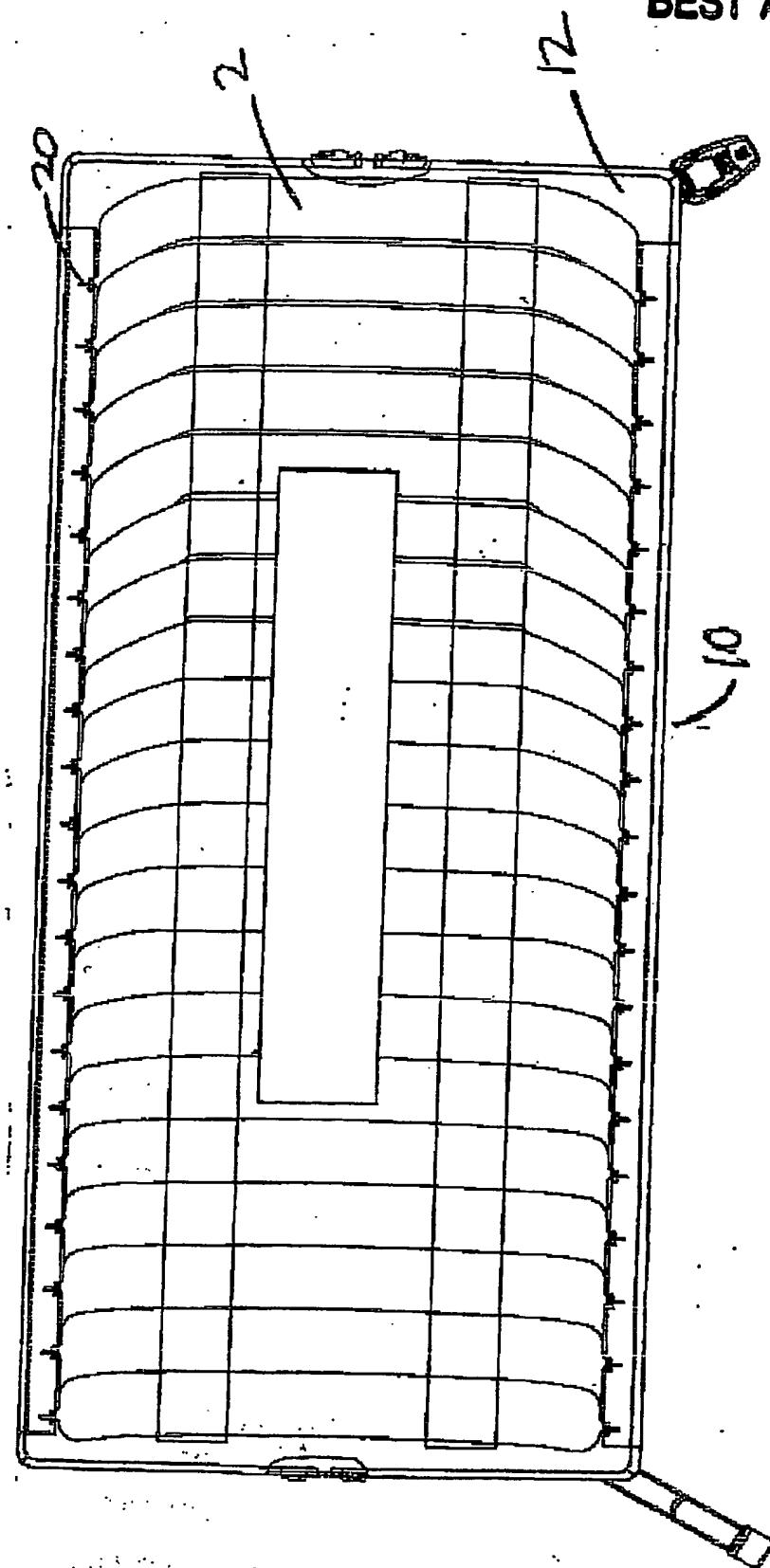


Figure 1

BEST AVAILABLE COPY

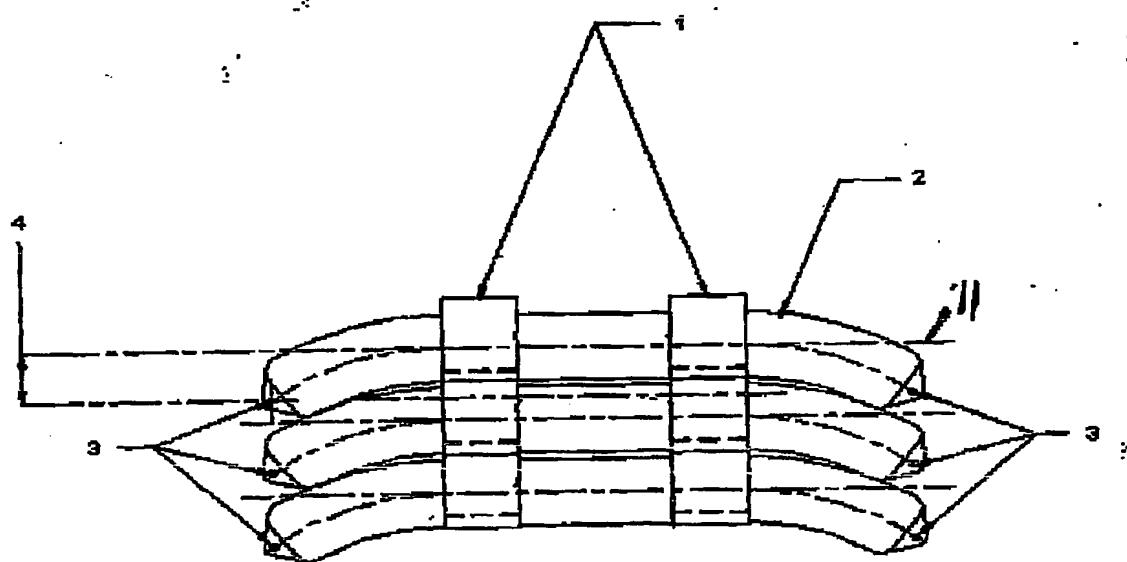


Figure 2

BEST AVAILABLE COPY

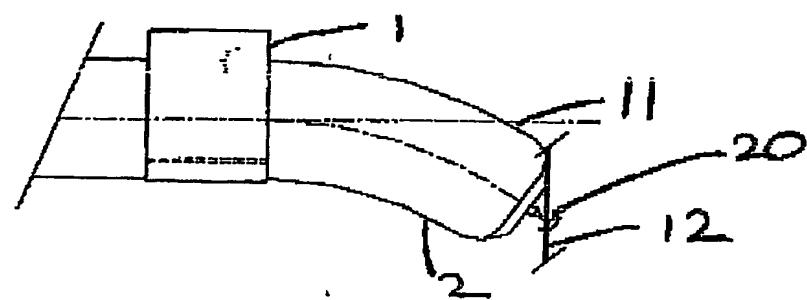


Figure 3

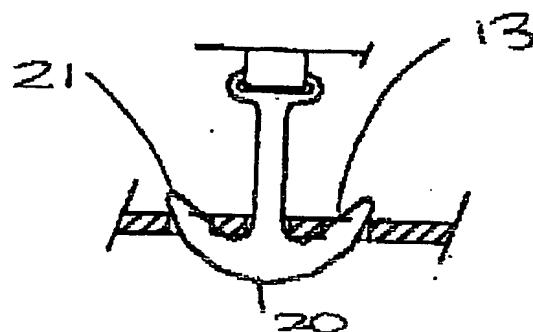


Figure 4